



DEPARTMENT OF THE ARMY
MISSISSIPPI VALLEY DIVISION, CORPS OF ENGINEERS
P.O. BOX 80
VICKSBURG, MISSISSIPPI 39181-0080

REPLY TO
ATTENTION OF:

CEMVD-PD-SP

12 DEC 12

MEMORANDUM FOR Commander, St. Louis District

SUBJECT: Review Plan Approval for Monarch Chesterfield Levee Project, Chesterfield, MO

1. References:

a. Email, CEMVS-PM-F, 3 December 2012, subject: Review Plans (encl 1).

b. Memorandum, IWR-WD, 30 November 2012, Flood Risk Management Planning Center of Expertise, subject: Risk Management Center Endorsement - Monarch Chesterfield Levee Project (encl 2).

2. The enclosed Review Plan (RP) for the Monarch Chesterfield Levee Project has been prepared in accordance with EC 1165-2-209. The RP has been coordinated with the Upper District Support Team and the Flood Risk Management Center who endorsed the plan in reference b. of the enclosed memorandum.

3. I hereby approve this RP, which is subject to change as circumstances require, consistent with study development under the Project Management Business Process. Subsequent revisions to this RP or its execution will require new written approval from this office. Non-substantive changes to this RP do not require further approval. The District should post the approved RP to its web site.

4. The MVD point of contact is Mr. Philip Hollis, CEMVD-PD-SP, (601) 634-5293.

2 Encls

EDWARD E. BELK, JR., P.E., SES
Director of Programs

REVIEW PLAN

***Monarch Chesterfield Levee
Chesterfield, MO***

St. Louis District

November 2012

MSC Approval Date: Pending

Last Revision Date: none



**US Army Corps
of Engineers®**

REVIEW PLAN

Monarch-Chesterfield Levee
Chesterfield, MO

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1. PURPOSE AND REQUIREMENTS

a. **Purpose.** This Review Plan defines the scope and level of peer review for the design and construction activities of the *Monarch-Chesterfield Levee District Project (Project)*.

b. **References**

- (1) Engineering Circular (EC) 1165-2-209, Civil Works Review Policy, 31 Jan 2010
- (2) Engineering Regulation (ER) 1110-1-12, Quality Management, 30 Sep 2006
- (3) Chesterfield, Missouri, Project Management Plan (111147)

c. **Requirements.** This review plan was developed in accordance with EC 1165-2-209, which establishes an accountable, comprehensive, life-cycle review strategy for Civil Works products by providing a seamless process for review of all Civil Works projects from initial planning through design, construction, and operation, maintenance, repair, replacement and rehabilitation (OMRR&R). It provides the procedures for ensuring the quality and credibility of U.S. Army Corps of Engineers (USACE) decision, implementation, and operations and maintenance documents and work products. The EC outlines three levels of review: District Quality Control/Quality Assurance (DQC), Agency Technical Review (ATR), and Independent External Peer Review (IEPR).

(1) District Quality Control (DQC). DQC is an internal review process of basic science and engineering work products focused on fulfilling the project quality requirements defined in the Project Management Plan (PMP). Basic quality control tools include a Quality Management Plan providing for seamless review, quality checks and reviews, supervisory reviews, Project Delivery Team (PDT) reviews, etc. It is managed in the home district. Quality checks may be performed by staff responsible for the work, such as supervisors, work leaders, team leaders, designated individuals from the senior staff, or other qualified personnel. However, they should not be performed by the same people who performed the original work, including managing/reviewing the work in the case of contracted efforts. Additionally, the PDT is responsible for a complete reading of any reports and accompanying appendices prepared by or for the PDT to assure the overall coherence and integrity of the report, technical appendices, and the recommendations before approval by the District Commander. The Major Subordinate Command (MSC)/District Quality Management Plans address the conduct and documentation of this fundamental level of review.

(2) Agency Technical Review (ATR). ATR is an in-depth review, managed within USACE, and conducted by a qualified team outside of the home district that is not involved in the day-to-day production of the project/product. The purpose of this review is to ensure the proper application of clearly established criteria, regulations, laws, codes, principles and professional practices. The ATR team reviews the various work products and assure that all the parts fit together in a coherent whole. ATR teams will be comprised of senior USACE personnel, preferably recognized subject matter experts with the appropriate technical expertise such as regional technical specialists (RTS), and may be supplemented by outside experts as appropriate. To assure independence, the leader of the ATR team should be from outside the home MSC.

(3) Independent External Peer Review (IEPR). IEPR is the most independent level of review, and is applied in cases that meet certain criteria where the risk and magnitude of the proposed

project are such that a critical examination by a qualified team outside of USACE is warranted. For clarity, IEPR is divided into two types, Type I is generally for decision documents and Type II is generally for implementation documents. A Type II IEPR (SAR) shall be conducted on design and construction activities for hurricane and storm risk management and flood risk management projects, as well as other projects where potential hazards pose a significant threat to human life. This applies to new projects and to the major repair, rehabilitation, replacement, or modification of existing facilities. External panels will review the design and construction activities prior to initiation of physical construction and periodically thereafter until construction activities are completed. The review shall be on a regular schedule sufficient to inform the Chief of Engineers on the adequacy, appropriateness, and acceptability of the design and construction activities for the purpose of assuring that good science, sound engineering, and public health, safety, and welfare are the most important factors that determine a project's fate.

2. REVIEW MANAGEMENT ORGANIZATION (RMO) COORDINATION

The RMO is responsible for managing the overall peer review effort described in this Review Plan. The RMO for the peer review effort described in this Review Plan is the Risk Management Center (RMC).

3. STUDY INFORMATION

- a. **Project Description.** The Great Flood of 1993, which overtopped and breached levees along the Mississippi River and its tributaries causing widespread damage to farms and communities, sparked national concern about the reliability of many flood control systems in the region. One of the largest urban centers damaged by the flood was in the valley of Chesterfield, Missouri, located about 14 miles west of St. Louis along the east bank of the Missouri River, between River Miles 45.0 and 38.5. In the early 1980s, the levee system was improved to protect against a 100-year frequency flood and was certified by the Federal Emergency Management Agency (FEMA). In 1993, when rising floodwaters breached the levee system, businesses closed and residents were evacuated from their homes. Interstate 64/U.S. Route 40 was closed for three weeks, as were other transportation routes into the area. The Spirit of St. Louis Airport was shut down for nearly three months and the St. Louis County Correctional Institution was forced to evacuate inmates to temporary quarters for up to six months. Estimated flood damages totaled \$100 million. After subsequent emergency repairs to the levee were made under the authority of Public Law 84-99, the levee was re-certified by FEMA in October 1997. The cause of the initial levee breach was a result of inadequate seepage control measures. Lack of such measures increases the risk of failure. Therefore, levee improvements were necessary to the existing levee system in order to provide reliable flood protection to the Chesterfield Valley.

The project includes the following flood control components: a system-wide levee raise to the 500-year flood event +3 feet with attendant seepage control structures including berms, relief wells, cutoffs; a railroad closure and gateway structure; a road closure at Centaur Road; a Howell Island borrow site access road; and Eatherton Road Realignment, an Eatherton Road-Olive Road ramp crossing; and alternate alignment upstream and downstream of the Daniel Boone Bridge; a Chesterfield Airport Road closure structure with retaining walls; ramping of various farm roads crossing over the levee (along Mo. River reach); and four pump stations and gravity drains.

- b. **Products to be reviewed.** This review plan applies to the plans and specifications and construction activities for all remaining work on the Project. This includes approximately 6 relief wells in Watershed 5 and levee raise at Pump Station 7. This also includes the following projects if they are determined to be necessary: gravity drains at Pump Station 4, Watershed 2/3 Pump Station, and flood proofing at the Caulks Creek MSD lift station.
- c. **General Site Location and Description.** The project area is located within the boundaries of the City of Chesterfield; it is bounded on the north by the Missouri River, on the west by the St. Louis County line, on the south by St. Louis Southwestern Railroad, and on the east by Bonhomme Creek. The levee system, which is located along the east/south bank of the Missouri River between river miles 38.5 and 46.0. There are approximately 7,500 acres in the Chesterfield Valley, with approximately 4,700 acres protected by the 11.5 mile levee.
- d. **Factors Affecting the Scope and Level of Review.** The scope of review of the project is affected by the rapid development of the project area. The development of the project area creates increased life safety risks as well as continuously changing site conditions and project needs. Real estate costs are also increasing which may impact the sponsor's ability to provide sufficient right of way, limiting project area. There is not expected to be any public dispute.

4. In-Kind Contributions.

MCLD has submitted three Section 104 credit applications. On 12 April 1996, the MCLD submitted a request for funding credit for construction of three pump stations within the project area. On March 1997, MCLD submitted a second credit request for levee improvements between Centaur Road and I-64/U.S. 40. On 21 April 1998, the Monarch-Chesterfield Levee District submitted a third request for levee realignment near the proposed Boone's Crossing/I-64/U.S. 40 interchange and levee improvements along Bonhomme Creek.

Information in each credit request was reviewed by MVS for engineering adequacy and potential compatibility with any future federal plan. The credit requests were submitted for approval through the Mississippi Valley Division to the Assistant Secretary of the Army (Civil Works) (ASA(CW)) in Washington, D.C. Each credit request was independently approved by the ASA (CW), pending project authorization and final audit of financial records.

The sponsor has indicated an interest in performing the remaining earthwork north of I-64/U.S. Rte 40 as a reimbursement under Section 211 of WRDA 1996. This work would extend from the Daniel Boone Bridge to the I-64/U.S. Rte. 40 bridge over Bonhomme Creek excluding the interchange levee near Boone's Crossing.

5. DISTRICT QUALITY CONTROL (DQC)

DQC is an internal review process of basic science and engineering work products focused on fulfilling the project quality requirements defined in the Project Management Plan (PMP). The home district shall manage DQC. Documentation of DQC activities is required and should be in accordance with the Quality Manual of the District and the home MSC. DQC efforts will include the necessary expertise to address compliance with published Corps policy. Reviews under this heading may include over the shoulder peer reviews; and Bid-ability, Constructability, Operability, and Environmental (BCOE) Reviews. Key

products for review include plans, specifications, design documentation reports, and cost estimate for the final design review.

6. AGENCY TECHNICAL REVIEW (ATR)

The objective of ATR is to ensure consistency with established criteria, guidance, procedures, and policy. The ATR will assess whether the analyses presented are technically correct and comply with published USACE guidance, and that the document explains the analyses and results in a reasonably clear manner for the public and decision makers. ATR is managed within USACE by the designated RMO and is conducted by a qualified team from outside the home district that is not involved in the day-to-day production of the project/product.

- a. Products to Undergo ATR.** All plans and specifications completed subsequent to approval of this review plan will undergo ATR.
- b. Required ATR Team Expertise.** ATR expertise will vary based on the particular needs of each project feature, but will be comprised of senior USACE personnel (Regional Technical Specialists (RTS), etc) and may be supplemented by outside experts as appropriate. The disciplines represented on the ATR team will reflect the significant disciplines involved in the planning, engineering, design and construction effort. These disciplines include civil, geotechnical, structural, hydraulics and hydrology, and construction. The chief criterion for being a member of the ATR team is knowledge of the technical discipline and relevant experience.
- c. Documentation of ATR.** DrChecks review software will be used to document all ATR comments, responses and associated resolutions accomplished throughout the review process. Comments should be limited to those that are required to ensure adequacy of the product. The four key parts of a quality review comment will normally include:
 - (1) The review concern – identify the product’s information deficiency or incorrect application of policy, guidance, or procedures;
 - (2) The basis for the concern – cite the appropriate law, policy, guidance, or procedure that has not been properly followed;
 - (3) The significance of the concern – indicate the importance of the concern with regard to its potential impact on the plan selection, recommended plan components, efficiency (cost), effectiveness (function/outputs), implementation responsibilities, safety, Federal interest, or public acceptability; and
 - (4) The probable specific action needed to resolve the concern – identify the action(s) that the reporting officers must take to resolve the concern.

In some situations, especially addressing incomplete or unclear information, comments may seek clarification in order to then assess whether further specific concerns may exist.

The ATR documentation in DrChecks will include the text of each ATR concern, the PDT response, a brief summary of the pertinent points in any discussion, including any vertical team coordination (the vertical team includes the district, RMO, MSC, and HQUSACE), and the agreed upon resolution. If an ATR concern cannot be satisfactorily resolved between the ATR team and the PDT, it will be elevated to the vertical team for further resolution in accordance with the policy issue resolution process described in either ER 1110-1-12 or ER 1105-2-100, Appendix H, as appropriate. Unresolved

concerns can be closed in DrChecks with a notation that the concern has been elevated to the vertical team for resolution.

At the conclusion of each ATR effort, the ATR team will prepare a Review Report summarizing the review. Review Reports will be considered an integral part of the ATR documentation and shall:

- Identify the document(s) reviewed and the purpose of the review;
- Disclose the names of the reviewers, their organizational affiliations, and include a short paragraph on both the credentials and relevant experiences of each reviewer;
- Include the charge to the reviewers;
- Describe the nature of their review and their findings and conclusions;
- Identify and summarize each unresolved issue (if any); and
- Include a verbatim copy of each reviewer's comments (either with or without specific attributions), or represent the views of the group as a whole, including any disparate and dissenting views.

ATR may be certified when all ATR concerns are either resolved or referred to the vertical team for resolution and the ATR documentation is complete. The ATR Lead will prepare a Statement of Technical Review certifying that the issues raised by the ATR team have been resolved (or elevated to the vertical team). A Statement of Technical Review should be completed, based on work reviewed to date. A sample Statement of Technical Review is included in Attachment 2.

7. INDEPENDENT EXTERNAL PEER REVIEW (IEPR)

- a. **General.** Type I and Type II IEPRs are conducted in accordance with the guidance promulgated in EC 1165-2-209. Type I IEPR reviews are managed outside the USACE and are conducted on project studies. Type I IEPR panels assess the adequacy and acceptability of the economic and environmental assumptions and projections, project evaluation data, economic analysis, environmental analyses, engineering analyses, formulation of alternative plans, methods for integrating risk and uncertainty, models used in the evaluation of environmental impacts of proposed projects, and biological opinions of the project study. Type I IEPR will cover the entire decision document or action and will address all underlying engineering, economics, and environmental work, not just one aspect of the study. For decision documents where a Type II IEPR (Safety Assurance Review) is anticipated during project implementation, safety assurance shall also be addressed during the Type I IEPR per EC 1165-2-209. Type II IEPR, or Safety Assurance Review (SAR), are managed outside the USACE and are conducted on design and construction activities for hurricane, storm, and flood risk management projects or other projects where existing and potential hazards pose a significant threat to human life. Type II IEPR panels will conduct reviews of the design and construction activities prior to initiation of physical construction and, until construction activities are completed, periodically thereafter on a regular schedule. The reviews shall consider the adequacy, appropriateness, and acceptability of the design and construction activities in assuring public health safety and welfare.
- b. **Decision on IEPR.** The current Review Plan addresses the design and construction activities for the MCLD Project. The Feasibility Study Report with Integrated Environmental Impact Statement approval was received 29 December 2000. All of these documents were prepared and approved before EC 1105-2-410, Review of Decision Documents dated 22 August 2008 and EC 1165-2-209 Civil Works Review Policy dated 31 January 2012, took effect. If at a later date it becomes necessary to

conduct planning activities for this project it will be necessary to modify and update the current Review Plan to accommodate the policy compliance requirements identified in EC 1165-2-209 for a Type I IEPR.

In accordance with EC 1165-2-209 a Type II IEPR (SAR) shall be conducted on design and construction activities for flood risk management projects. This applies to new projects and to the major repair, rehabilitation, replacement, or modification of existing facilities.

- c. **Products to Undergo Type II IEPR.** External panels will conduct reviews of the design and construction activities prior to the initiation of physical construction and, until construction activities are completed, periodically thereafter on a regular schedule, and before substantial completion of construction activities. The reviews shall consider the adequacy, appropriateness, and acceptability of the design and construction activities in assuring public health, safety, and welfare.
- d. **Required Type II IEPR Panel Expertise.** The IEPR team will vary based on size and complexity of the product being review, but will consist of no more than six members including the IEPR Leader. The IEPR team will be coordinated through the Risk Management Center (RMC). External panels will conduct reviews of the design and construction activities prior to the initiation of physical construction and, until construction activities are completed, periodically thereafter on a regular schedule. The reviews shall consider the adequacy, appropriateness, and acceptability of the design and construction activities in assuring public health, safety, and welfare. The Review Management Office (RMO) for Type II IEPR reviews is the RMC. Panel members will be selected using the National Academies of Science (NAS) policy for selecting reviewers. Type II IEPR is not exempted by statute from the Federal Advisory Committee Act (FACA).

The IEPR will be performed by an AE firm, using a USACE Indefinite Delivery Indefinite Quantity (IDIQ) Contract. The AE firm will provide the USACE with the final independent external expert reviewer list, including their credentials. Expert reviewers shall have experience in design and construction of projects similar in scope to the project. Expert reviewers shall be registered professional engineers in the United States, or similarly credited in their home country. The expert reviewers must have an engineering degree. A Master's degree in engineering is preferable, but not required, as hands-on relevant engineering experience in the listed disciplines is also important.

The Type II IEPR panel members will be comprised of individuals that have not been involved in the development of the decision document, meet the National Academy of Sciences guidelines for independence, and will be chosen by an outside organization. The following types of expertise may be represented on the Type II IEPR team:

- (1) IEPR team leader. The IEPR team leader shall hold a professional license in structural or civil engineering with a MS degree or higher civil or structural engineering. The IEPR leader shall have a minimum of 20 years of design experience and experience with multi-million dollar, flood risk management projects. The team leader shall be a recognized leader with good communication skills to lead a diverse review team comprised of individuals located across the nation.
- (2) Hydraulics. The reviewer for hydraulics shall be a registered professional engineer with a minimum of a MS degree or higher in engineering science. The reviewer shall have a minimum of 20 years experience in hydrologic analysis and design of hydraulic structures as it relates to riverine flood risk management projects. Reviewer should have experience in

the analysis and design involving interior drainage and riverine models using HEC-RAS and hydrology models using HEC-HMS. This member should also be knowledgeable in coincidence of frequency and the application of USACE risk and uncertainty analyses on flood risk management projects. Reviewer should be experienced with similar projects in an urban setting and participated in review of riverine flood risk management projects.

- (3) Structural. The reviewer for structural features shall be a registered professional structural engineer with a MS degree or higher in civil or structural engineering. The reviewer shall have a minimum of 20 years experience in the design, layout, and construction of large urban flood risk management projects. Reviewer should be familiar with the design and construction of tall (15 feet high) flood walls, removable flood walls, closure structures, interior drainage facilities, concrete placement, and relocation of underground utilities. The reviewer should have experience with static and seismic design per industry code standards and USACE design regulations for Civil Works projects including soil-structure interaction evaluation and design. The reviewer shall also have a working knowledge of the software Mathcad 15, CWALSHT - USACE sheet pile design, CPGA - USACE pile group analysis, CFRAME - USACE frame analysis, CTWALL – USACE cantilever wall analysis, STAAD Pro- Finite element analysis, RISA-3D- Finite element analysis, and Microsoft Excel.
- (4) Civil. The reviewer for civil features shall be a registered professional engineer with a minimum MS degree or higher in civil or construction engineering. They shall have a minimum of 20 years experience in the design, layout, and construction of a large urban flood risk management projects to include knowledge regarding levees, interior drainage facilities, earthwork, concrete placement, design of access roads, and relocation of underground utilities. The reviewer must be familiar with USACE regulations and standards.
- (5) Mechanical. The reviewer for mechanical features shall be a registered professional engineer with a BS degree or higher in mechanical engineering. Reviewer shall have a minimum of 20 years in mechanical design of pump stations. The Reviewer must be familiar with USACE regulations and standards
- (6) Geotechnical. The reviewer for geotechnical features shall be a registered professional engineer with a minimum BS degree or higher in civil or geotechnical engineering. Reviewer shall have a minimum of 20 years experience in subsurface investigations, floodwall and levee design, seepage and slope stability evaluations, erosion protection design, and construction and earthwork construction. The reviewer must be familiar with USACE regulations and standards.
- (7) Electrical. The reviewer for electrical features shall be a registered professional engineer with a BS degree or higher in electrical engineering. Reviewer shall have a minimum of 20 years in electrical design of pump stations. The reviewer must be familiar with USACE regulations and standards.

e. **Documentation of Type II IEPR.** Dr Checks review software will be used to document IEPR comments and aid in the preparation of the Review Report. Comments should address adequacy and acceptability of the economic, engineering and environmental methods, models, and analyses used. IEPR comments should general include the same four key parts as described for ATR comments in Section 6. The Contractor will be responsible for compiling and entering comments into Dr Checks. The IEPR team will prepare a Review Report that will accompany the publication of the final report for the project and shall:

- (i) Disclose the names of the reviewers, their organizational affiliations, and include a short paragraph on both the credentials and relevant experiences of each reviewer;
- (ii) Include the charge to the reviewers prepared by the Contractor;

- (iii) Describe the nature of their review and their findings and conclusions; and
- (iv) Include a verbatim copy of each reviewer's comments (either with or without specific attributions), or represent the views of the group as a whole, including any disparate and dissenting views.

8. REVIEW SCHEDULES AND COSTS

- a. **ATR Schedule and Cost.** The estimated cost per ATR is \$20,000, but will vary based on the complexity of the project feature being reviewed. The ATR will occur during key stages in the P&S for each feature completed following this review plan. The next scheduled milestone for ATR is the Watershed 5 Relief Wells Plans and Specs, which is scheduled to begin 4 March 2013 and be complete by 27 March 2013. Since this is a small project, the comment resolution meeting will be conducted via teleconference. The following is the preliminary ATR schedule:

Watershed 5 Relief Wells	4 March 2013
Levee Raise at Pump Station 7	29 March 2013
Gravity Drains at Pump Station 4	FY14
Watershed 2/3 Pump Station	FY16
Floodproofing at Caulks Creek	FY17

- b. **Type II IEPR Schedule and Cost.** The IEPR costs are paid from Project funds. Milestones to consider for a Type II IEPR (SAR) are at the record of final design in the Design Documentation Report; at the completion of the plans, specifications, and cost estimate; at the midpoint of construction for a particular contract, prior to final inspection, or at any critical design or construction decision milestone. The IEPR schedule is established by the RMO in conjunction with the District (PM and PDT). The following Type II IEPR (SAR) have not been scheduled at this time, but will occur in FY2013: Watershed 5 Relief Wells, and the Levee Raise at Pump Station 7, for an estimated cost of \$120,000. Type II IEPR (SAR) planned for FY14 include Gravity Drains at Pump Station 4 for an estimated cost of \$60,000. Remaining work to undergo Type II IEPR after FY14 includes Watershed 2/3 Pump Station and Floodproofing at Caulks Creek. This includes cost for in-house personnel, RMO administration and management, and the panel member participation.

9. PUBLIC PARTICIPATION

As required by EC 1165-2-209, the approved Review Plan will be posted on the District public website for public comment. Information will be conveyed to the public through the use of press releases and media interviews as necessary and through the use of posting information to the St. Louis District's website. There is no formal public review for the DDR, plans and specifications and construction phases. However, the cost share partner, Monarch Chesterfield Levee District, will have opportunities to review the DDR, plans and specifications and construction phases as part of the PDT.

10. REVIEW PLAN APPROVAL AND UPDATES

The Mississippi Valley Division Commander is responsible for approving this Review Plan. The Commander's approval reflects vertical team input (involving district, MSC, RMO, and HQUSACE members) as to the appropriate scope and level of review for the project. Like the PMP, the Review Plan is a living document and may change as the study progresses. The home district is responsible for keeping the Review Plan up to date. Minor changes to the review plan since the last MSC Commander approval are documented in Attachment 3. Significant changes to the Review Plan (such as changes to

the scope and/or level of review) should be re-approved by the MSC Commander following the process used for initially approving the plan. The latest version of the Review Plan, along with the Commanders' approval memorandum, should be posted on the Home District's webpage. The latest Review Plan should also be provided to the RMO and home MSC.

11. REVIEW PLAN POINTS OF CONTACT

Public questions and/or comments on this review plan can be directed to the following points of contact:

- Tracey Kelsey, St. Louis District Project Manager, 314.331.8477
- Philip Hollis, Mississippi Division Program Manager, 601.634.5293
- Tom Bishop, Risk Management Center, 303.963.4556

ATTACHMENT 1: TEAM ROSTERS

Project Delivery Team

A complete listing of the project delivery team can be found in the Project Management Plan

Vertical Team

The Vertical Team consists of members of the HQUSACE and CEMVD Offices. The Vertical Team plays a key role in facilitating execution of the project in accordance with the PMP. The Vertical Team is responsible for providing the PDT with Issue Resolution support and guidance as required. The Vertical Team will remain engaged seamlessly throughout the project via monthly telecons as required and will attend In Progress Reviews and other key decision briefings. The CEMVD District Liaison is the District PM's primary Point of Contact on the Vertical Team.

DQC Roster

Team Member	Area of Expertise	Contact Information
TBD	Civil Engineering	
TBD	Geotechnical Engineering	
TBD	Mechanical Engineering	
TBD	Electrical Engineering	
TBD	H&H Engineering	
TBD	Structural Engineering	

ATR Roster (ATR Roster will be determined by size and complexity of product)

Recommended Agency Technical Review Panel		
NAME	DISCIPLINE	Education & Experience
TBD	ATR Team Leader/Civil, P.E.	BS in Civil Engineering, 15+ years experience in the civil design and construction of levees
TBD	Geotechnical, P.E.	BS in Civil/ Geotechnical Engineering, 10+ years experience in the geotechnical design and construction of levees
TBD	Hydrology and Hydraulics, P.E.	BS in Civil/Hydraulic Engineering, 10+ years experience in the hydrology and hydraulic design
TBD	Mechanical, P.E.	BS in Mechanical Engineering, 10+ years experience in mechanical design
TBD	Electrical, P.E.	BS in Civil/Hydraulic Engineering, 10+ years experience in electrical design
TBD	Structural Engineer	BS in Structural Engineering, 10+ years experience in the structural design and construction of levee enclosure structures

ATTACHMENT 2: SAMPLE STATEMENT OF TECHNICAL REVIEW FOR DECISION DOCUMENTS

COMPLETION OF AGENCY TECHNICAL REVIEW

The Agency Technical Review (ATR) has been completed for the <type of product> for <project name and location>. The ATR was conducted as defined in the project's Review Plan to comply with the requirements of EC 1165-2-209. During the ATR, compliance with established policy principles and procedures, utilizing justified and valid assumptions, was verified. This included review of: assumptions, methods, procedures, and material used in analyses, alternatives evaluated, the appropriateness of data used and level obtained, and reasonableness of the results, including whether the product meets the customer's needs consistent with law and existing US Army Corps of Engineers policy. The ATR also assessed the District Quality Control (DQC) documentation and made the determination that the DQC activities employed appear to be appropriate and effective. All comments resulting from the ATR have been resolved and the comments have been closed in DrCheckssm.

Name
ATR Team Leader
Office Symbol/Company

Date

Tracey Kelsey
Project Manager
CEMVS-PM-N

Date

Nathan Snorteland
Director, Risk Management Center
CEIWR-RMC

Date

CERTIFICATION OF AGENCY TECHNICAL REVIEW

Significant concerns and the explanation of the resolution are as follows: Describe the major technical concerns and their resolution.

As noted above, all concerns resulting from the ATR of the project have been fully resolved.

SIGNATURE

Name
Chief, Engineering Division
Office Symbol

Date

ATTACHMENT 3: REVIEW PLAN REVISIONS

Revision Date	Description of Change	Page / Paragraph Number